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NOTES ON THE BIRDS OF NORTHERN MELANESIA. 2[1]

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The present paper continues the series of taxonomic revisions of the species occurring in the Solomon Islands and the Bismarck Archipelago.

MEGAPODES (**MEGAPODIIDAE**)

This family is represented in the area by a single species and subspecies, *Megapodius freycinet eremita* Hartlaub, which was critically discussed in an earlier publication (1938, Amer. Mus. Novitates, no. 1006, pp. 1–15). No additional information has since been obtained. The wing molt of megapodes is puzzling and has apparently not yet been examined carefully. Since *M. f. eremita* resembles the forms occurring in the western Papuan Islands (*freycinet*) and northern Moluccas (*forsteni*) and differs strikingly from the forms on New Guinea, it appears probable that *eremita* colonized northern Melanesia from the west.

QUAILS AND PHEASANTS (**PHASIANIDAE**)

This family is represented in the area only by the Painted or Pigmy Quail (*Coturnix* [= *Excalfactoria*] *chinensis*). As stated elsewhere (1945, Zoologica, vol. 30, p. 106) there seems to be no need for splitting off this species generically by recognizing *Excalfactoria*. The species is apparently a rather recent immigrant of the Australian region (Mayr, 1944, Emu, vol. 44, pp. 116, 127), and the subspecies that have developed in this area are rather slight. The Bismarck Archipelago was probably colonized from

[1] Birds Collected During the Whitney South Sea Expedition, No. 57. The preceding 10 papers in the Whitney series are American Museum Novitates Nos. 1152, 1166, 1175, 1176, 1192, 1237, 1248, 1269, 1294, and 1321.

the north coast of eastern New Guinea, although the species has so far not yet been collected west of the tributaries of the Ramu River (Watut).

Coturnix chinensis lepida Hartlaub

This subspecies is restricted to the Bismarck Archipelago. It differs from *chinensis*, *lineata*, and other races chiefly by the reduction of the chestnut area on the abdomen, although *papuensis* is somewhat intermediate. For differences between *lepida* and *papuensis* see Mayr and Rand, 1936 (Amer. Mus. Novitates, no. 868, p. 1).

A series of adult males from Lihir seems to have the light streaking of the upperparts more pronounced. There seems to be more black on the back, and the rufous belly patch is more extensive. It is quite large in one bird. The size is smaller, wing 66–68.5 against 69.5, 70, 70, 72 in four adult males from New Britain. No females from New Britain are available for comparison. I do not believe the difference between the two populations is sufficiently striking to justify subspecific separation.

RANGE: New Britain, Duke of York Islands, New Ireland, New Hanover, and Lihir Islands. The species was discovered on Lihir by W. F. Coultas, although O. Meyer had already recorded (1934, Jour. Ornith., vol. 82, p. 301) the occurrence on Lihir of a grassland bird called *ipupup* by the natives.

BUTTON-QUAILS (**TURNICIDAE**)

The rare Striped or Spotted Button-Quail (*Turnix sylvatica*) has reached northern Melanesia in only two places, Guadalcanal (*salomonis* Mayr, 1938) and New Britain-Duke of York Islands (*saturata* Forbes). No new material has been examined to permit an elaboration of previously published findings (1938, Amer. Mus. Novitates, no. 1007, pp. 1–3). *T. s. salomonis* has been recently found "not uncommon locally throughout the grassland of the Guadalcanal north coast" (Beecher, 1945, Fieldiana, Zool., vol. 31, p. 35). More detailed observations on the biology and the status of this form have since been published by Pendleton (1947, Auk, vol. 64, pp. 417–421).

The zoogeographical history of this species is quite interesting. The neighboring forms of Java (*bartelsorum* Neumann) and of the Lesser Sunda Islands (*maculosa* Temminck) are so strikingly different that Rensch (1931, Mitt. Zool. Mus. Berlin, vol. 17, p.

476) concluded that they should be assigned to two separate species, a decision with which I concurred (Mayr, 1938, *loc. cit.*). Stresemann (1939, Jour. Ornith., vol. 87, pp. 319, 411) interpreted this striking difference of geographically neighboring forms as indicating considerable antiquity of the time of colonization. He lists *Turnix sylvatica* among the species that invaded the Sunda Islands via the Philippines-Celebes and then spread westward to Java after reaching Sumbawa. I do not agree with this interpretation. The eastern group (*maculosa-whiteheadi*) is apparently connected with the western group (*sylvatica dussumier*) through a series of intermediate populations in Indo-China, south China, and Formosa (*davidi* Delacour, *mikado* Hachisuka). I have not seen material of these forms and base my conclusions on the published descriptions. The Javan form (*bartelsorum*), on the other hand, is not part of this chain of eastern forms, since it is almost indistinguishable from the Indian *dussumier*. It appears thus that the Sunda Islands were invaded twice, once as stated by Stresemann via the Philippines to the Lesser Sunda Islands, but also a second time directly from Siam-Burma to Java. Thus *Turnix sylvatica bartelsorum* is one further addition to the list of Javan birds with discontinuous distribution with the nearest relative in the Burma region.

RAILS (**RALLIDAE**)

Rails are among the most characteristic birds on the islands of the Pacific. In spite of their seemingly weak power of flight they seem to be eminently able to colonize isolated oceanic islands. Rails as a group are rather vulnerable to predation, but they flourish on islands where predators are absent. Under these conditions the wing size is often reduced and the birds lose the power of flight partially or completely. Close relatives may differ principally in the size of the wing, the length of the legs, and other body proportions (see below under *Rallus philippensis* and *R. insignis*).

This instability of the morphology of rails has led to the establishment of many genera that are based on single species. Among the 52 usually recognized genera of rails no fewer than 36 (= 70 per cent) are monotypic. Such classification fails to recognize the function of the generic name in binomial nomenclature, namely, to indicate relationship. A revision of the rail family with the arrangement of the species into related groups is badly needed. Among the Old World rails the following genera may

have to be synonymized on that occasion: *Nesolimnas* (with *Rallus*), *Mentocrex* (with *Canirallus*), *Crecopsis* (with *Crex* or *Porzana*), *Limnocorax* (with *Porzana*), *Aenigmatolimnas* (with *Porzana*), *Tribonyx* (with *Gallinula*), *Edithornis* (with *Pareudiastes*), *Porphyrula* and *Notornis* (with *Porphyrio*). The currently adopted sequence frequently separates genera widely that appear related. For instance, it seems to me as if *Gallirallus* were near *Rallus philippensis*. *Megacrex* and *Eulabeornis* appear related to *Amaurornis*. The *Rallus*, *Porzana*, and *Gallinula* groups within the rails are fairly well defined. However, it still needs to be determined which of the other genera should be associated with these groups, and which others are either isolated or form still other groups.

Ten species of rails have so far been recorded from northern Melanesia. Three of these are endemic: *Rallus insignis* (New Britain), *Nesoclopeus woodfordi* (Solomon Islands), and *Edithornis silvestris* (San Cristobal). The other seven species are widespread, some of them extremely so. The following discussions of most of the species are limited to the populations that occur in northern Melanesia.

Rallus philippensis

The Banded Rail is one of the most successful colonists of the islands of the Pacific. Its range extends from Cocos Keeling and the Philippines in the west to Tasmania and New Zealand in the south and to Samoa in the east. Three geographical representatives of this species have become strikingly different, but study reveals clearly the close relationship. One is the Guam Rail (*R. owstoni*) which differs from *philippensis* by the plain upperparts, the obliteration of the breast band, the absence of rufous in the plumage, and by different proportions. The other two species are the Wake Island Rail (*R. wakensis*) and the Chatham Island Rail ("*Nesolimnas*" *dieffenbachi*). The genus *Nesolimnas* was established by Andrews for *dieffenbachi* in comparison with *Cabalus*. Even though the bill of *dieffenbachi* is somewhat decurved, the species is so clearly a member of the *philippensis* group that it would be unnatural to separate this species generically.

Mr. Jean Delacour, who had the kindness to examine for me the type of *dieffenbachi* in the British Museum, confirmed my conclusions: "There is no doubt that *dieffenbachi* is but a modified

philippensis, hardly more different than *macquariensis*, for instance. It has a curved bill, and shorter toes and legs. The head pattern is similar, and the tawny color has extended to the whole breast and has become barred. The belly is much darker. The mantle is barred, not spotted. Wings and back are coarsely spotted with dark brown. It undoubtedly belongs to the same group—superspecies, I should say.

"The Weka is also related. The head pattern is the same if less bright and also the breast barred; gray throat and foreneck and belly. All have similar ruddy primaries, barred with black."

The species *Rallus philippensis* has a rather spotty distribution in northern Melanesia. In the Solomon Islands it is confined to the easternmost islands which were invaded from the New Hebrides. In the Bismarck Archipelago it is very common on some of the smaller islands, but it is rare or local on most of the larger islands. It seems to be absent from Feni, Lihir, St. Matthias, and possibly the mainland of Manus. The islands of the Bismarck Archipelago were obviously colonized from the adjacent parts of New Guinea. Some of the races are closest to *palustris* (Humboldt Bay region), others to *reductus* (eastern New Guinea). There has probably been repeated interchange of individuals between New Guinea and the islands.

At first glance there seems little difference between the birds of the various islands, and what difference there is appears obscured by individual variation. However, a closer study shows that each of the populations in the area is characterized by a specific combination of the 18 or 20 characters that are known to vary geographically in this species. It is possible to recognize six subspecies in the Bismarck Archipelago and in the Solomon Islands. These races are:

Rallus philippensis praedo, new subspecies

TYPE: A.M.N.H. No. 335170; male adult; Skoki Island, Sabben group, Admiralty Island; December 20, 1933; Whitney South Sea Expedition (W. F. Coultas).

Crown dark rufous heavily streaked with black, hind neck dark rufous mottled with black. Upper back blackish with numerous white dots which in very few specimens fuse into white bars; lower back, rump, and upper tail-coverts very dark with scanty white dots. Breast band well formed, narrow, occasionally barred with black; breast and flanks evenly barred black and white,

middle of abdomen usually heavily barred also; sometimes a few unbarred gray feathers below the breast band.

Wing, male adult, 132–148 (140.4), female adult, 132–145 (138.1). Bill (from end of lateral feathering to tip), male adult, 25.5–30 (28.3), female, 24–28 (26.1). Tail, male, 56–71. Tarsus, male, 40–43. The measurements of *lacustris* are: wing, male, 147, 148, 154, female, 147. Tail, male, 65, 68, 69, female, 62. Bill, male, 30, 30, 31, female, 27. Tarsus, male, 44, 44, 46, female, 41.

Very similar to *lacustris* from the opposite mainland of New Guinea, but smaller and more slender. Upper back more blackish, brown parts in plumage of upperparts reduced, more amber brown, less olive; breast band narrower.

It differs from *R. p. lesouefi* by having the crown much darker (dark shaft streaks broader), by having the upperparts spotted, not barred with white, by having the white and black of the under side of equal width, while in *lesouefi* the black bars are wider, and by having the rufous and black bars on the outer webs of the primaries of equal width, while in *lesouefi* the black bars are much wider.

RANGE: Known only from the type locality.

In 1929 (Ornith. Monatsber., vol. 37, p. 190) Stresemann described *Rallus philippensis admiralitatis* from [Papenbush Island on the north coast of] Manus on the basis of one adult male and two immatures. The characters of this race are given as: "feathers of crown of the same rufous chestnut color as the nape, entire upperparts including rump and tail-feathers covered with narrow white bars; white bars on underparts, particularly flanks, much wider; middle of abdomen unbarred buff." This description is so much at variance with the characters of *praedo, lesouefi,* or *meyeri* that further collecting at Papenbush is needed. Coultas, who made a special visit to this island, did not encounter the species. It is possible, however, that the birds on the islands along the north coast of Manus are similar to Ninigo birds (see below).

There is no indication of sexual dimorphism of coloration in this series, even if a few specimens are eliminated that might conceivably be mis-sexed. There is only a slight mean difference of size. The most remarkable feature of the Sabben series is its relative uniformity of coloration. The spots on the back are sometimes small (dot-like), sometimes more like narrow bars; the upper back is sometimes more brownish, sometimes purer

black; the abdominal spot is usually barred like the flanks, sometimes almost plain; the breast band is always present and, except in two specimens, uninterrupted. However, it may be narrower or wider, paler or darker, barred or plain. All these differences are very slight. This relative uniformity is remarkable, because usually in this species populations show marked individual variation. This is particularly true for mainland populations.

The type locality, the Sabben group, consists of a group of tiny sandy islets, miles from any larger land mass. The rails, according to Coultas, live among the shrubs and low trees on which thousands of Lesser Noddies (*Anous tenuirostris*) are nesting. The rails, though plentiful, dodged quickly from one clump of weeds to another and had to be collected while "on the run." They probably live on the food dropped by the terns, as well as on the numerous flies. It is well possible that they also devour eggs and young whenever accessible. No rails were found on Rambutyo, Nauna, or the mainland of Manus.

Rallus philippensis anachoretae, new subspecies

TYPE: A.M.N.H. No. 336279; male adult; Anchorite Island; May 17, 1934; Whitney South Sea Expedition (W. F. Coultas).

Crown well streaked, rufous to hair brown. Upper back heavily marked with white. Six of 10 specimens have white cross bars on the feathers of the upper back; lower back, rump, and under tail-coverts almost unmarked with white. Feathers of back, scapulars, and upper wing-coverts with rather broad, olive brown edges. Breast band very broad, unbarred. Barring of underparts reduced; little or no barring above breast band; a few or numerous unbarred gray feathers below breast band; barring of breast and flanks coarse; unbarred area in middle of abdomen large, white, often almost reaching breast band.

Upperparts rather similar to those of *praedo*, but crown not so heavily streaked and more hair brown, hind neck purer rufous. Back less blackish, but more heavily marked with white, white cross bars on upper back. Edges of scapulars, etc., broader and more olive brown, no white on lower back. Underparts very different with the broad breast band and the reduction of barring. Size larger.

Wing, male, 145–150 (147.0), female,136, 140, 145. Tail, male, 65–71 (68.2), female, 64, 65. Bill, male, 28–31 (29.1), female, 25, 28. Tarsus, male, 41–45 (43.4), female, 40, 40, 41.

RANGE: Endemic on the Anchorite Islands.

Rallus philippensis subspecies

Two series of birds, one from the Hermit group and the other from Ninigo, are somewhat intermediate between the birds from the Anchorite Islands and from Sabben. The upperparts are darker than in *anachoretae* but not quite so blackish on the upper back as in *praedo*. Upperparts well marked with white; upper back with narrow white cross bars in all but three of the 18 specimens; considerable white spotting and barring also on upper tail coverts and tail, particularly in the Ninigo series. Crown very dark, edges of feathers more or less rufous; color of the edges of scapulars, etc., intermediate between *anachoretae* and *praedo*. Upperparts on the whole rather similar to *praedo* except for the barring of upper back and lighter general coloration. Underparts more similar to *anachoretae*, but breast band narrower and barring of flanks not quite so coarse; middle of abdomen usually unbarred; a few unbarred gray feathers below the breast band in all but two of the 18 birds. Rufous bars on outer webs of primaries wider than black bars.

HERMIT ISLAND: Wing, male, 143, 144, 147, female, 135. Tail, male, 64, 68, 70, female, 56, 64. Bill, male, 27.5, 28, 29.5, 30, 31, female, 27, 27. Tarsus, male, 42, 43, 44, 45, 46, female, 41, 41.

NINIGO GROUP: Wing, male, 141, 146, 151, 152, 152, 154, female, 136, 142, 142, 143, 148. Tail, male, 63–66 (64.5), female, 59, 61, 61, 64. Bill, male, 28, 28, 29, 29, 31, 31, female, 25, 25, 25.5, 27.5. Tarsus, male, 41, 43, 45, 45, 46, female, 38, 39, 40, 41, 42.

RANGE: Ninigo group (Ahu) and Hermit group (Maron).

These two populations are known only from the specimen collected by the Whitney expedition (W. F. Coultas). The characters of these birds agree fairly well with the description of *admiralitatis* Stresemann. It will be safer not to name the Ninigo-Hermit population until it can be shown that it differs from *admiralitatis*.

Rallus philippensis lesouefi Mathews

Eulabeornis philippensis lesouefi MATHEWS, 1911, Birds of Australia, vol. 1, p. 198. New Hanover.

Small and very dark. Crown deep rufous, narrowly streaked with black. Upper back black, with only a trace of olive brown,

finely cross barred with white. Edges of scapulars and feathers of back narrow, walnut brown; lower back and rump copiously spotted and streaked with white. Pectoral band narrow, frequently barred with black. Barring of breast and flanks very fine; black bars broader than white ones; virtually no gray unbarred feathers below breast band. Lower abdomen well barred. White and rufous bars on outer webs of primaries rather narrow.

Wing, male, 139, 141, 143, female, 137, 139, 140. Tail, male, 57, 63, 64, female, 55, 57, 58. Bill, male, 27, 28, 30, female, 26, 27, 27. Tarsus, male, 40.5, 41.5, 42, female, 40, 40.5, 41.

RANGE: New Hanover, New Ireland (subsp. ?), Tabar, and Tanga. A single male from Tanga agrees perfectly with the New Hanover series. A female from Tanga and a single male from Tabar have white spots rather than cross bars on the upper back and have the middle of the abdomen virtually unbarred.

TABAR: Male, wing 131, bill 29, tarsus 41. Tanga: wing, male, 137, female, 132. Tail, male, 59, female, 60. Bill, male, 30, female, 25. Tarsus, male, 45, female, 40.

I have not examined any material from New Ireland.

Rallus philippensis meyeri Hartert

Hypotaenidia philippensis meyeri HARTERT, 1930, Novitates Zool., vol. 36, p. 121. Witu, French Islands.

Similar to *R. p. lesouefi*, but larger and lighter. Crown more hair brown, less chestnut rufous, and with heavier shaft streaks; olive brown edges of feathers of back much broader, more or less hiding the black centers of the feathers. White spotting of upperparts much reduced; uppermost back with small white spots, instead of cross bars; tertials, lower back, rump, upper tail-coverts, and tail feathers with little or no white spotting. Pectoral band uninterrupted, broad, more or less barred with black. Black and white bars of breast and flanks narrow and of about equal width except on flanks where the black bars are about twice as wide as the white; a fairly large unbarred buff area on lower abdomen and crissum; only a few unbarred gray feathers below the breast band in two of the six adults.

Wing, male, 142, 146, 147, 151, female, 137, 141. Tail, male, 60, 64, 66, female, 58, 62. Bill, male, 29, 30, 31, 31.5, female, 26, 30. Tarsus, male, 45, 45, 45, 46.5, female, 42, 45.

RANGE: Known only from the type locality.

Two males from northern New Britain (Bainings) agree with the Witu series fairly well in the coloration of the upperparts. The breast band, however, is narrower, and lower abdomen and under tail-coverts are barred more distinctly. Wing, 132, 138. Bill, 25, 30. Tarsus, 40, 40.

Rallus philippensis reductus Mayr

Rallus philippensis reductus MAYR, 1938, Amer. Mus. Novitates, no. 1007, p. 6. Long Island.

RANGE: Long Island and (subsp. ?) coast of northeast New Guinea from Astrolabe Bay to China Straits.

(See original description for a detailed discussion.)

A COMPARISON OF THE SIX BISMARCK ARCHIPELAGO RACES OF *RALLUS PHILIPPENSIS*

In order to facilitate a comparison of the characters of these six races, I have tabulated them in a quantitative manner. Definite grades were given each of the 15 characters (table 1).

The key to these grades is as follows:

COLOR OF CROWN (A): Hair brown (1), partly rufous (2), very rufous (3)
BLACK STREAKING OF CROWN (B): Sparse (1), heavy (2)
COLOR OF UPPER BACK (C): Brownish (1), blackish (2), very black (3)
WIDTH OF EDGES OF SCAPULARS (D): Broad (1), narrower (2), narrow (3)
COLOR OF SCAPULARS (E): Olive brown (1), less olive (2), walnut brown (3)
WHITE ON UPPER BACK (F): Spotted (1), often barred (2), usually barred (3)
WHITE SPOTS ON LOWER BACK AND RUMP (G): None (1), few (2), copious (3)
BREAST BAND (H): Broad (1), less broad (2), narrow (3), interrupted or missing (4)
BARRING ABOVE BREAST BAND (I): Absent or little (1), much (2)
BARRING OF BREAST BAND (K): Little or none (1), strong (2)
UNBARRED GRAY FEATHERS BELOW BREAST BAND (L): Many (1), few (2), almost none (3)
BARRING OF FLANKS (M): Coarse (1), fine (2)
COMPARATIVE WIDTH OF BARS (N): White bars broad (1), white bars narrower (2), black bars very broad (3)
BARRING OF LOWER ABDOMEN (O): None (1), occasional (2), heavy (3)

These point scores may be used to express differences between the various subspecies, although no special effort was made in this tabulation to weigh the value of each character or to allow for possible correlation between characters.

Combined totals in the differences of the values of various subspecies are as follows: *anachoretae* and Ninigo, 6.4; *anachoretae* and *praedo*, 15; *praedo* and *lesouefi*, 8; *lesouefi* and *meyeri*, 15;

meyeri and *reductus*, 7.5; *reductus* and *praedo*, 11. These scores give a rough indication of the degree of difference between these forms.

TABLE 1

A COMPARISON OF SIX BISMARCK ARCHIPELAGO RACES OF *Rallus philippensis*

	A	B	C	D	E	F	G	H	I	K	L	M	N	O
anachoretae	1.5	1.5	2	1	2	2.5	1	1	1	1	1	1	1	1
Ninigo	2.5	2	2.5	2	2	2.5	2	1.5	1.2	1	1.5	1.2	1.5	1.5
praedo	2.5	2	2.5	3	2.5	1.5	2	2.5	2	1.5	2.5	2	2	3
lesouefi	3	1	3	3	3	3	3	3	1.5	2	3	2	3	3
meyeri	2	1.5	1	1	2	1.5	1	2	2	2	3	1.5	2	1
reductus	1	1.5	2	2	2	2	1	4	2	2	1.5	1	2	1

Rallus philippensis christophori Mayr

Rallus philippensis christophori MAYR, 1938, Amer. Mus. Novitates, no. 1007, p. 7. San Cristobal.

RANGE: Eastern Solomon Islands.
(See original description.)

THE GENUS **HABROPTERYX** STRESEMANN

The large New Britain rail was described by Sclater as *Hypotaenidia insignis* and compared with *H. torquatus*. In 1932 Stresemann pointed out (Ornith. Monatsber., vol. 40, p. 122) that *insignis* has all the characteristics of a flightless bird, such as absence of a tail and soft reduced wing-feathers, and he therefore separated *insignis* in the monotypic genus *Habropteryx*. In spite of the apparent flightlessness of this species I doubt whether it is wise to camouflage its obvious *Rallus*-nature by segregating it in a separate genus. Not only does *insignis* resemble such species as *owstoni* and *torquatus* in coloration, but it also agrees in the shape of the bill and other structural details with other species of *Rallus*. As far as the proportions go, there is a gradual change from a typical flying species like *R. philippensis* to *R. insignis*. This is particularly well illustrated by the ratio of tarsus length to wing length. In nine male adults of *R. philippensis* the tarsus length is 28.3–32.7 (30.1) per cent of the wing length; in five *R. wakensis* 33.7–38.1 (35.3) per cent; in four *R. owstoni* 38.2–41.8 (39.4) per cent; in five male adults of *R. insignis* 40.1–45.1 (43.0) per cent.

The tendency to become flightless is widespread among rails and results in a number of convergences (Stresemann, 1932, Alauda,

vol. 4, pp. 1–5). The principal ones are the reduction of wing and tail, increased size of legs and toes, and a change of feather structure. A study of color patterns and bill structure, however, indicates that each of the flightless species is more closely related to a flying species than to another flightless species.

Rallus insignis Sclater

Wing, male, 149, 149, 151, 151, 152, female, 138, 139, 140, 143, 144, 144, 148. Bill, male, 41, 41, 41, 41.5, 42, 43, 45.5, 46, female, 39–41 (40.2). Tarsus, male, 61, 63, 63, 64, 64.5, 65, 66, 68, female, 55, 55, 56.5, 58, 58.5, 60, 62, 63.

RANGE: New Britain.

Coultas obtained this species in 1933 near Rabaul, in the Nakanai Mountains, as well as in the Bainings Mountains inland of Wide Bay. He wrote me: "*Habropteryx insignis* is not flightless. I suspect that it can and does cover considerable distances on the wing. My recollection [March, 1947] of the bird is that it frequents heavy damp forest including mountain valleys as I often heard them calling at night in such places. The bird frequents native gardens, probably in search of snails, and is snared and eaten by the natives. I believe this rail to be common on all of New Britain."

Rallina tricolor

This species has apparently a rather spotty distribution in northern Melanesia. It has been found so far only on New Ireland, New Hanover, and St. Matthias. Coultas, who did not visit these islands, never encountered the species.

The geographical variation in this species has not yet been adequately described. Mathews in 1911 (Birds of Australia, vol. 1, p. 205) named a New Guinea race *grayi*, giving the difference from topotypical Aru birds as "the abdomen being barred with white and more numerously." As Hartert said correctly (1915, Novitates Zool., vol. 22, p. 26), the barring is somewhat variable, and the type of *grayi* itself has merely traces of a few buff bars! Too few Aru skins are in collections to make any definite assertion, but they seem indistinguishable from birds from western New Guinea. The types of *tricolor* and of *grayi* agree very well with each other.

Birds from Aru (female, wings 145, 147; bill 25; tarsus 49) agree in size with birds from western New Guinea (for measurements, see

table 2). Birds from eastern New Guinea are smaller. The measurements of an exceptionally large male from Lake Daviumbu are given in italics in table 2. These eastern birds are also on the average more slate gray above and usually unbarred on the abdomen. The type of *grayi* is unfortunately a bird without exact locality, but appears to have come from western New Guinea, a probability which is supported by its large size (wing 153, bill 29, tarsus 49.5). The available material does not justify the separation of an eastern and a western New Guinea race.

Birds from Waigeu are larger and more conspicuously barred underneath; they will be described below.

Two birds from New Hanover are even smaller than eastern New Guinea birds and rather heavily barred with buff on the abdomen. The mantle is brownish olive rather than slate gray as in most eastern New Guinea birds. These are Stresemann's *convicta* (1925, Ornith. Monatsber., vol. 33, p. 17) based on a male from New Ireland with a wing length of 133 mm.

St. Matthias is inhabited by an undescribed race which appears to be even smaller and which is remarkable by its coloration.

The largest (Waigeu) and smallest (St. Matthias) birds are thus found on the islands that mark the northwestern and northeastern outposts of the range of the species. The subspecies on these two islands have also special color characteristics—barring of the abdomen on Waigeu and paleness of the rufous parts on St. Matthias. In this species, as in so many others, the peripheral populations are thus the most distinct. More centrally located populations are not only intermediate but also much less distinct from one another.

The description of the two new races is as follows:

Rallina tricolor maxima, new subspecies

TYPE: A.M.N.H. No. 300622; female adult; Waigeu, May 29, 1931; Georg Stein.

Similar to *tricolor,* but larger; abdomen and flanks copiously barred with white or buff; mantle with a distinct olive brown wash.

RANGE: Waigeu.

Rallina tricolor laeta, new subspecies

TYPE: A.M.N.H. No. 545470; male adult; St. Matthias Island, Bismarck Archipelago; July 7, 1923; A. F. Eichhorn (Rothschild Collection).

Even smaller than *convicta*. Breast, upper back, and top of head orange tawny, not rufous chestnut as in the other races. Back slate gray, abdomen with an indication of buff bars.

RANGE: Known only from the type.

TABLE 2

MEASUREMENTS OF FIVE POPULATIONS OF *Rallina tricolor*

	Wing	Bill	Tarsus
Waigeu (*maxima*)	♂ 157	♂ 31.5	♂ 55
	♀ 155.5	♀ 28	♀ 50.5
Western New Guinea and Aru (*tricolor*)	♂ 148, 150, 153	♂ 27, 29	♂ 48.5, 49, 49.5
	♀ 142, 145, 145, 147	♀ 25, 28, 29	♀ 49, 49.5, 50
Eastern New Guinea, Fly River, Dampier Island (*tricolor?*)	♂ 135, 139, 140, 140, 146, *150*	♂ 26, 27.5, 28.5, *29*	♂ 47, 47, 49.5, *52*
	♀ 133, 135, 135, 137, 139	♀ 26, 27, 27, 28	♀ 45, 47, 47
New Ireland, New Hanover (*convicta*)	♂ 133, 133	—	♂ 46 +
	♀ 127.5	♀ 26.5	—
St. Matthias (*laeta*)	♂ 132	♂ 25	♂ 42

Nesoclopeus woodfordi

Woodford's Rail is a geographical representative of *N. poecilopterus* of Fiji. It differs from that species by the much darker general coloration, by the yellow instead of greenish gray (or slate blue) legs, and by the (partial) absence of chestnut bars on the wing feathers. The species is so far known only from three islands in the Solomons. The populations of two of these islands, Bougainville and Ysabel, are strikingly distinct and deserve to be described as new subspecies. Unfortunately, no material seems to be available from Guadalcanal, the type locality of the nominate race, except for the unique type in the British Museum. This type, to judge from descriptions, is unexpectedly more similar to the geographically distinct Bougainville race, although somewhat intermediate between both other races. More material from Guadalcanal is needed to work out the differences between these races in more detail.

The validity of the genus *Nesoclopeus* requires further study. In proportions and under-wing color pattern *Nesoclopeus woodfordi* is strangely similar to *Rallus insignis*.

Nesoclopeus woodfordi immaculatus, new subspecies

TYPE: A.M.N.H. No. 329078; female adult; Ysabel, Solomon Islands; August 31, 1927; Whitney South Sea Expedition.

Similar to *woodfordi*, but larger and darker. Upperparts sooty black, with merely an indication of brown on the wing (particularly of the male). Underparts also black; no white mottling on lower abdomen or under tail-coverts. No trace of white or tawny spots or bars on wing feathers, upper and under wing-coverts, or axillaries.

Wing, male, 179, female, 170. Tail, male, 73, female, 78. Bill, male, 41.5, female, 37.5. Tarsus, male, 65, female, 63.

RANGE: Known only from a pair from Ysabel.

Top of the head, hind neck, and upper breast of the female are somewhat washed with brown. Chin and upper throat are pale ash gray. There is an indication of a gray stripe through the eye. The male appears to be molting his body plumage. The old feathers, which are still present on head, neck, and throat, are a faded-out buffy ash gray. This is by no means the remains of a juvenal plumage, since a juvenal of the Bougainville race does not differ strikingly from adults. This faded-out head plumage appears almost pathological, but the remainder of the plumage of this bird is normal.

Nesoclopeus woodfordi tertius, new subspecies

TYPE: A.M.N.H. No. 545540; male adult; Bougainville, Solomon Islands; January 17, 1908; A. S. Meek (Rothschild Collection).

Similar to *woodfordi*, but smaller, browner above, and wings with more white. Abdomen and flanks mottled with buff, under tail-coverts indistinctly barred with white; primaries with four white bars, basal bars of inner primaries tawny, particularly on outer webs. There is much less white on the wing of *w. woodfordi* as stated in the original description: "Inner webs of the bastard wing and first two primary-quills with three or four transverse white spots; rest of primaries with one or two small white spots near their base" (Ogilvie-Grant, 1889, Ann. Mag. Nat. Hist., ser. 6, vol. 4, p. 320). Bill yellowish horn color, not black as in the nominate race.

RANGE: Bougainville.

The measurements are as follows: wing, male adult, 143, 148, 152, 155, 157, female, 151. Tail, male, 68, 69, 70, 71, female, 70.

Bill, male, 36, 36.5, 37.5, 38, 38. Tarsus, male, 54, 56.5, 57, 57, 57, female, 54. The type of *woodfordi* measures larger according to Ogilvie-Grant (*loc. cit.*): wing, 172.7; tail, 71.1; bill, 40.6; tarsus, 59.7.

Gymnocrex plumbeiventris Gray

This species has been recorded in northern Melanesia only from New Ireland, from where apparently the type of *Rallus intactus* Sclater came (Mayr, 1933, Ibis, p. 550). The species seems to be rare on New Ireland, and no specimens from there have been seen by me. The species has been found on Karkar Island (1915, Novitates Zool., vol. 22, p. 27) near the southern border of the Bismarck Archipelago.

Porzana tabuensis

This species, which is otherwise so widespread on the islands of the Pacific, has not yet been recorded from the Solomon Islands, and only a single stray was found in the Bismarck Archipelago: a male taken on Vuatom on September 28, 1936, by Father O. Meyer (1937, Ornith. Monatsber., vol. 45, p. 24). Stresemann interprets this bird as a winter visitor from Australia or New Zealand. However, its small size (wing, 80) agrees better with the Pacific population (Amadon, 1942, Amer. Mus. Novitates, no. 1175, p. 60). Also, there is no evidence that the Australian birds migrate to the Pacific. On the other hand, the fact that the species occurs on some of the most isolated coral islets indicates that it is a great colonizer. The Vuatom bird may have been a straggling colonist, and it would not be surprising if the species were found sooner or later nesting somewhere in northern Melanesia.

Poliolimnas cinereus

This orginally Papuan species, which has reached the Philippines and Malaysia in the west, is widespread in northern Melanesia, although somewhat local. The races of this species are slight and intergrading, except for *brevipes* (Vulcan Islands, Bonin) which is characterized by its proportions, and *meeki* (St. Matthias) by its aberrant coloration (dark gray underparts). As Hartert (1924, Novitates Zool., vol. 31, p. 261) has stated correctly, the birds from nearly every locality are slightly different from those of every other locality, but the differences are slight, overlapping, and

intergrading. The study of this species is complicated by the fact that much variation due to foxing, wear, and individual variation is superimposed on the slight geographical variation.

The shape and size of the black spot in front of the eye depend on the method of preparation of the skin. Worn specimens are paler, particularly on the wing, and the contrast between pale edges and dark centers on the feathers of the upperparts is more conspicuous.

Juvenile birds are brownish on the upperparts. Among adult birds there is some indication of two not very distinct color phases. The normal one is olivaceous gray, particularly on upper back and wing, the other one more rufous brown. In these brownish birds there is usually much brown on nape and crown; crissum and lower flanks also are deeper rufous. The gonads are indicated as large in all sexed specimens, and there is no other evidence to suggest that these brownish birds are immature. Among 15 males from New Britain three are brownish; among four males from New Ireland, one is.

In spite of a number of differences, to be described below, all the populations of the Bismarck Archipelago, except the one on St. Matthias Island, agree with Australian birds fairly well, particularly in the color of the underparts. It seems therefore wisest to follow Hartert and to include all these populations with *leucophrys*.

Poliolimnas cinereus leucophrys Gould

The characters of the various populations in the Bismarck Archipelago are as follows:

NEW BRITAIN: Darker than Australian birds and less contrasting on upperparts than New Guinea birds. Feathers of upper back without dark centers. Feathers of crown with broader gray edges and occasionally suffused with brownish. Sides of neck and breast darker gray, a distinct gray breast band occasionally visible. Some birds indistinguishable from Australian birds. Bill larger.

NEW IRELAND: Like New Britain birds. Dark centers of feathers of upperparts perhaps more conspicuous. Underparts slightly darker gray. On the whole, surprisingly similar to Australian birds.

LIHIR ISLANDS: Coloration of upperparts even less contrasting than New Britain birds, hardly different from *meeki*, but more

grayish olive, less brownish. Crown often washed with brownish. Gray of sides of neck and breast deeper and more extensive, but not even nearly approaching condition of *meeki*.

The general size on the various islands seems to be about the same as in the Australian birds, but the proportions differ.

Wing, adult males: Australia 91–97 (94.2), New Guinea 90–99 (93.2), New Britain 88–96 (92.2), New Ireland 90–98 (92.9), Lihir 92–98 (95.5).

Bill index (in per cent of wing length), adult males: Australia 20.6–22.9 (22.0), New Guinea 20.9–23.6 (22.4), New Britain 22.2–25.3 (24.2), New Ireland 21.4–25.8 (23.8), Lihir 23.5–26.3 (24.9).

The tarsus of Australian birds is about 35 per cent of the wing length, in the Bismarck Archipelago birds 36–37 per cent.

The peripheral Lihir Island population, although of large size and with a very large bill, overlaps in all of its characters too much the populations of the other islands to be separated from *leucophrys*.

RANGE: Northern Australia, most of the Moluccas (Buru birds agree better with *cinereus*), New Guinea, Fergusson Island, New Britain, Duke of York Islands, New Ireland, New Hanover, and Lihir Islands.

Poliolimnas cinereus meeki Hartert

Underparts very dark, ashy gray; only chin, throat, and an irregular longitudinal patch in the middle of abdomen are white. Upperparts dark and rather brownish; dark centers of feathers not pronounced.

Wing, male, 94, 97. Bill index 22.7, 22.9.

RANGE: Restricted to St. Matthias Island. In color the most distinct race of the species.

The species is apparently absent in the Admiralty Islands. It is local in Solomon Islands, from where I have not examined any material (Baker, 1948, Smithsonian Misc. Coll., vol. 107, no. 15, p. 9).

Amaurornis olivaceus

This species is widespread in northern Melanesia where it shows a great deal of slight geographical variation. I have seen material from eight islands, and each of these populations is somewhat different from any of the others. The only available name is *nigrifrons* Hartert, 1926, based on a series from the Witu Islands.

Birds from the other islands in the Bismarck Archipelago (except Long Island) can also be included with *nigrifrons* (details, see below). Birds from the eastern Solomon Islands are smaller and are of different color; they deserve to be described as a separate race. A male and a female from Long Island agree better with north New Guinea than with Witu birds.

Size and proportions are summarized in the following tabulation:

Wing length of adult males: north New Guinea, 138, 157; Long Island, 140.5; Witu Island, 139, 141, 141, 143, 146; New Britain, 133, 133, 134, 137, 137.5, 138, 139, 142, 143, 145, 146 (138.9); New Hanover, 141; Bougainville, 141; Lihir, 130, 135; San Cristobal, 131; Gower, 124, 126, 128, 129, 129, 129, 130, 131, 134, 134 (129.4).

Relative length of tarsus in per cent of wing length (mean of males): Cape York (*ruficrissa*), 35.4; north New Guinea, 37.4; Witu, 39.6; Long Island, 40.6; New Britain, 40.6; New Hanover, 40.4; Bougainville, 41.1; San Cristobal, 41.2; Gower, 41.2; Lihir, 42.6; indicating a steady increase of relative tarsus length.

On the basis of these differences the following races can be distinguished:

Amaurornis olivaceus subspecies

Eastern New Guinea.

Apparently differing from Arfak birds by being darker. Feathers of forehead and lores rather blackish. Back more olive gray, less brownish. Culmen narrow and blackish, not broadened at base and red.

No New Guinea locality is represented by more than two specimens. A satisfactory study of the geographical variation of New Guinea birds cannot be undertaken until more specimens are available. There are no clear-cut differences between a small series from the Moluccas and two Arfak birds, a fact which induced me to consider *frankii* a synonym of *moluccanus* (1938, Amer. Mus. Novitates, no. 1007, p. 11). However, birds from the north coast of eastern New Guinea (Ifar, Idenburg River) seem to differ by the above given characteristics.

Amaurornis olivaceus nigrifrons Hartert

Gallinula (*Amaurornis*) *olivacea nigrifrons* HARTERT, 1926, Novitates Zool., vol. 33, p. 172.

Culmen narrow and blackish. Plumage very dark, both above and below. Crown and back somewhat suffused with brown. Breast of a deep bluish gray, throat in males always gray, throat in one of three females whitish.

Differs from the subspecies on the north coast of east New Guinea most conspicuously by having the lower abdomen rufous buff without a trace of gray and the under tail-coverts deep tawny, not walnut brown.

Wing, male, 139–146 (142.0), female, 126, 133, 136. Bill, male, 30.5–33 (31.7), female, 28, 29, 29. Tarsus, male, 54–58 (56.2), female, 51, 52, 53. Middle toe with claw, male, 64.5–65, female, 62, 63, 64. Tarsus index, male, 37.7–40.4, female, 38.3–41.2.

RANGE: Witu Islands.

The following populations are sufficiently similar to the above described Witu population to be included with *nigrifrons:*

NEW BRITAIN: Somewhat lighter underneath and rather variable. Lower abdomen lighter and sometimes distinctly mixed with gray. Throat of about 20 per cent of females whitish.

Wing, male, 133–146 (138.9), female, 129–142 (132.3). Bill, male, 29–32 (30.2), female, 26.5–29.5 (28.0). Tarsus, male, 54–58 (55.9), female, 49–54 (51.5). Tarsus index, male, 39.3–42.2, female, 37.0–40.8 (38.8).

Two females from the Nakanai Mountains average smaller: wing, 126, 132; bill, 25, 27; tarsus, 49, 52; index, 38.9, 39.4.

NEW HANOVER: Crown and back rather olive, lower abdomen fairly grayish. Single female with whitish throat.

Wing, male, 141, female, 130. Bill, male, 33, female, 28.5. Tarsus, male, 57, female, 52.

LIHIR: Two males are rather olive on crown and back; feathers on base of bill blackish; lower abdomen very grayish; bill greenish without black. Small with relatively long tarsus.

Two males: wing, 130, 135. Bill, 30.5, 31.5. Tarsus, 56, 57. Index, 41.5, 43.8.

BOUGAINVILLE: A single male is browner on back and crown than Witu birds and paler on the breast. Throat rather light, lower abdomen tawny without gray. In coloration almost exactly intermediate between Witu and Gower birds. Of the large size of *nigrifrons,* but with a relatively longer tarsus.

Wing, male, 141, female, 132, 141. Bill, male, 31, female, 28.5, 30. Tarsus, male, 58, female 51, 52. Middle toe with claw, male, 68, female, 60, 65.

The species has also been recorded from the Duke of York Islands and from New Ireland.

Amaurornis olivaceus ultimus, new subspecies

TYPE: A.M.N.H. No. 227650; male adult; Gower Island, Solomon Islands; April 7, 1930; Whitney South Sea Expedition (H. Hamlin, W. F. Coultas).

Differs from *nigrifrons* by smaller size, relatively longer tarsus, and paler coloration. Crown and back rather brownish without olive tint. Gray of underparts pale and ashy; throat whitish even in males. Middle of lower abdomen pale vinaceous without gray; crissum and under tail-coverts deep vinaceous, not rufous. Bill green with a blackish culmen.

A male from San Cristobal is also small, but has the breast bluer gray, and a gray, not whitish, throat; the lower abdomen is more deeply colored. Two females from San Cristobal have a whitish throat, but a darker abdomen than Gower females.

Wing, Gower, male, 124–134 (129.4), female, 121–132 (125.6); San Cristobal, male, 131, female, 122, 128. Bill, Gower, male, 28–32 (30.6), female, 27–30 (28.5); San Cristobal, male, 29, female, 25, 30. Tarsus, Gower, male, 50–55 (52.9), female, 48–52.5 (50.9); San Cristobal, male, 54, female, 47, 51. Middle toe with claw, Gower, male, 56–61 (58.7), female, 55–59 (57.6). Tarsus index, Gower, male, 38.9, 40.3, 41.1, 41.1, 41.1, 41.8, 42.1, 42.9, female, 38.4, 39.8, 40.2, 40.3, 40.3, 40.3, 41.9.

RANGE: Gower, San Cristobal, and Santa Anna (see Ramsay, 1882, Proc. Linnaean Soc., New South Wales, vol. 7, p. 665).

WEIGHT: A few weights (in grams) recorded in this species are as follows:

North New Guinea (Ifar), male, 205, female, 200.

San Cristobal, male, 225, female, 162.

Gower, male, 189, 196, 201, 213, 248, female, 135, 192.

The taxonomic characteristics of birds from the various islands leave little doubt that the species immigrated into northern Melanesia via New Britain from where it spread on to neighboring islands and via Bougainville to the Solomons.

Edithornis silvestris Mayr

The type is still the only known specimen of this species (Mayr, 1933, Amer. Mus. Novitates, no. 590, p. 1), which seems to be restricted to the mountains of San Cristobal, Solomon Islands. A

revision of the family Rallidae may reveal the necessity for combining this genus with *Pareudiastes*.

Porphyrio porphyrio

Very few ornithologists have seen enough material to appreciate the almost unbelievable amount of individual variation among the eastern populations of this species. The confusion caused by this variability is illustrated by the fact that the "Catalogue of birds in the British Museum" (vol. 23, pp. 202, 204) records *ellioti* from the Admiralty Islands, New Britain, and Viti Levu, and "*smaragdinus*," among many other localities, also from New Britain and Fiji. Hartert (1924, Novitates Zool., vol. 31, pp. 105–108) was certain that two subspecies, *melanopterus* and *melanotus*, coexisted in certain localities, but I have shown (1938, Amer. Mus. Novitates, no. 1007, p. 12) that these very different looking individuals are actually members of a single polymorphic population.

The immense individual variability makes it exceedingly difficult to delimit geographical races. After examining the 218 specimens in the American Museum from Melanesia (east of New Guinea) and Polynesia, I am unable to substantiate a single diagnostic character given in the literature for the various subspecies. Certain trends are recognizable, e.g., for a very greenish blue breast shield in the Admiralty Islands and New Caledonia, but indistinguishable specimens are also found in the Solomon Islands and Fiji. *P. p. ellioti* (Admiralty Islands) was described on the basis of the greenish tinge on the blackish brown back. Actually I have seen adult males from Manus with a jet black back, with a bluish back, and a greenish bronze-colored back, all collected at the same locality. Birds with a brownish back may be found anywhere in insular Melanesia and Polynesia, not only on Samoa as claimed in the literature. Within this entire area there is not a single population that could be diagnosed. Furthermore, much of the existing slight geographical variation is irregular. There is a trend towards a more purplish breast in the Bismarck Archipelago and Samoa, towards large size in the north central Solomon Islands and in southern Melanesia, and so forth.

Porphyrio porphyrio samoensis Peale

In view of the impossibility of defining subspecies within this area, it becomes necessary to refer all the populations from the

Admiralty Islands to Samoa and New Caledonia to the collective subspecies *samoensis*. It differs from *melanopterus* principally in two characters, on the average a brighter breast shield and on the average a browner back. Individual specimens are not always distinguishable.

The various populations of *Porphyrio porphyrio samoensis* that occur in northern Melanesia can be described as follows (number of adult birds examined stated in parentheses):

BISMARCK ARCHIPELAGO

MANUS (27): Breast shield very light ("greenish") blue; breast and flanks deep purple. Thighs greenish blue contrasting with color of flanks; middle of belly jet black. Wing bend greenish blue, of the color of the breast shield. Underparts very uniform, mantle extremely variable, either very black (12), or blackish extensively washed with blue (2), or brownish black with a more or less pronounced greenish wash, particularly on the wings (9), or brownish with brown wings (7).

Characteristic are the light breast shield and the frequent greenish or bluish wash on the back.

ST. GABRIEL (1): Exactly like Manus birds.

RAMBUTYO (2): Breast shield slightly purer blue, less greenish than in Manus birds.

TABAR (5): Breast shield more variable than in the entire Manus series, greenish blue like Manus (2), more bluish (3), the two bluest more purplish blue than any Manus bird. Wing bend, greenish blue (4), blue (1). Middle of abdomen very purplish, not jet black as in Manus series. Back black (1), greenish, or bronze brown (4).

NEW BRITAIN (1 FEMALE ADULT): Breast shield bluish close to, but beyond, Manus extreme. Thighs purplish. Wing bend light blue; back greenish black, matching several Manus birds.

Two New Britain birds in the British Museum have breast patch and wing bend rather light blue; the back is blackish brown in one, more greenish in the other.

NEW HANOVER (1 ADULT, UNSEXED): Breast very purplish, much more so than any Manus or even Tabar bird. Blue on face not reaching eye. Back greenish black with bluish wash; wing bend purplish blue. Thighs purplish, not contrasting with flanks.

TABLE 3

TARSUS/WING INDEX IN *Porphyrio*

	Male Adult	Female Adult
Manus	36.3, 36.7, 37.7, 37.8, 38.1, 38.3, 39.4, 40.2, 40.7, 40.8, (38.6)	31.9, 32.4, 33.3, 34.1, 34.3, 35.3, 35.5, 36.0, 36.2, 37.5, 40.3 (35.2)
New Britain, Tabar	35.5	33.2, 33.2, 33.2, 33.3, 33.9, 35.0
Bougainville-Choiseul	38.2, 39.0	35.5, 36.3, 36.5, 39.1
Ysabel-Fara	34.2, 36.3, 37.5	33.7, 33.8
Russell, Guadalcanal, Malaita	33.0, 34.5, 34.8, 35.5, 36.1, 36.2, 37.1 (35.4)	33.0, 34.1
Rennell	34.9	35.8

SOLOMON ISLANDS

BOUGAINVILLE-SHORTLAND (4): Breast shield greenish blue (like Manus) (2), bluish (2) but not so purple as New Hanover bird; wing bend blue (2), greenish blue (2); middle of abdomen rather blackish; thighs bluish (2), matching color of flanks (2). Back rather blackish (1), intermediate (1), very brown (2).

CHOISEUL (3): Breast shield greenish blue as Manus (1), blue (1), purplish blue as New Hanover (1); wing bend blue (1), greenish blue (2); middle of abdomen black. Back black (2), greenish brown (1). Face rather blackish.

YSABEL (7): (Greenish-) blue like blue Manus extreme (4), blue (1), purplish blue (2); wing bend greenish blue (5), blue (2); middle of abdomen black, thighs scarcely bluer than flanks. Back and wings never all black, blackish brown (4), brown (3).

TETIPARI-NEW GEORGIA (5): Breast shield very uniform, blue (5), not so purple as Ysabel extreme; wing bend greenish blue (2), blue (3). Back and wings very black (2), blackish brown (2), brownish (1).

MALAITA (2): Breast shield blue (2); back rather black (2).

GUADALCANAL (2): Breast shield blue (1), purplish blue (1); back rather blackish (1), very brown (1).

SAN CRISTOBAL (1): Breast shield not developed, underparts uniform purple. Back dull blackish.

RENNELL (2): Breast shield very purple blue (2), like that of New Hanover or the two most purple Ysabel birds. Middle of

belly black, thighs purple, sides of face with much blue. Back blackish (2), wings with considerable brown.

The color of the back can be summarized as follows: of 30 adult specimens from the Admiralty Islands 14 (= 46.7 per cent) have it black or blue black, 9 (= 30 per cent) greenish or brownish black, and 7 (= 23.3 per cent) brown. Of 26 adult birds from the Solomons 9 (= 34.6 per cent) have it black, 10 (= 38.5 per cent) have it intermediate, and 7 (= 26.9 per cent) have it brown. There is thus no significant difference between the two series.

Size and Proportions

There are no consistent trends, but slight differences from island to island. Birds from Manus and from Bougainville-Choiseul have a tarsus that is rather long compared to the wing. In Bismarck Archipelago birds and those from the eastern Solomons it is shorter (table 3).

The measurements of wing and culmen are as follows:

Manus: Wing, male adult: 213, 215, 219, 219, 221, 221, 223, 226, 227, 231, 231 (222.1); female adult: 206, 207, 208, 208, 210, 211, 213, 214, 216, 216, 219, 222, 227 (213.8). Culmen, male adult, 63, 65, 65, 66, 66.5, 67, 67.5, 69, 70, 72, 73, 75, 75 (68.8); female adult, 54, 57, 59, 60, 60, 60, 60, 62, 62, 63, 63, 64, 65, 66, 67, 67 (61.5).

New Britain, New Hanover, Tabar: Wing, male adult, 225, female adult, 211, 215, 217, 221, 223, 229. Culmen, male adult, 66, female adult, 62, 62, 62, 62, 63, 67.

Solomon Islands

Bougainville, Shortland, Choiseul: Wing, male adult, 231, 238, female adult, 211, 215, 217, 226, 234. Culmen, male, 67.5, 68.5, female, 62, 62, 62, 63, 65, 67.

Ysabel, Fara: Wing, male, 250, 260, 267, female adult, 231, 237, 239, 245. Culmen, male, 65, 70, 71, female, 60, 63, 65, 66, 66.

New Georgia-Tetipari: Wing, male adult, 222, 238, 240, 247, female adult, 232. Culmen, male, 62, 62, 65, 67, female, 66.

Guadalcanal: Wing, female adult, 221, 232. Culmen, 57, 62.

Malaita: Wing, male adult, 225, 228. Culmen, 66, 68.

San Cristobal: Wing, female adult, 216. Culmen, 59.

Rennell: Wing, male adult, 239, female adult, 239. Culmen, male, 70, female, 72.

Some of the listed populations, such as those from Manus and the eastern Solomons, are of rather small size. The Ysabel population is gigantic, while the birds from the other islands are intermediate. Nothing would be gained in breaking up this assemblage by naming the large-sized Ysabel population.

THE SHORE BIRDS OF NORTHERN MELANESIA

Only two species of the Order Charadriiformes are known to nest in northern Melanesia, the Little Ringed Plover (*Charadrius dubius*) and the Reef Thick-knee (*Esacus magnirostris*). Migrant shore birds also are not abundant in the number of either species or individuals. This is not surprising since northern Melanesia is not in the path of the direct route that leads from China to Australia. Yet 18 species of migrant shore birds have already been recorded from the area, and six others are a possibility.

In view of the growing interest in migration through oceanic regions, full details will be given of the specimens so far recorded from the islands. Locality records for the Papuan region are given in my "List of New Guinea birds" (1941). Stresemann (1941) gives detailed data for the shore birds that migrate through the Celebes region. Detailed data for Micronesia will be given by Baker (in press). Records for the species *Pluvialis dominica*, *Limosa lapponica*, *Heteroscelus incanus*, *Arenaria interpres*, and *Ereunetes albus* are given by Stickney (1943). P. C. Bull (1948) has made excellent around-the-year observations of the shore birds of northern Melanesia. A list of the principal literature on the shore birds of northern Melanesia is appended. Material listed in the subsequent tabulations without specific mention of the collector was obtained by the Whitney South Sea Expedition.

Dr. E. Stresemann has had the great kindness to send me a list of the shore birds from the Bismarck Archipelago in the Berlin Museum. Mrs. Betty Carnes assisted in the listing of the shore birds of the Whitney South Sea Expedition.

Breeding Species

Charadrius dubius

The races of this species are poorly diagnosed in the literature and their ranges erroneously given. Of the 21 specimens in the Rothschild Collection identified as the nominate race no fewer than 19 were misidentified specimens of *curonicus*. Actually, the dif-

ferences between *curonicus* and *dubius*, once recognized, are very striking.

I am indebted to the curators of the United States National Museum, Washington, D. C., and of the Museum of Comparative Zoölogy, Cambridge, Massachusetts, for the kind loan of material and to Mr. H. Deignan for calling my attention to the similarity of "*papuanus*" to true *dubius*.

The species contains three well-defined subspecies.

Charadrius dubius curonicus Gmelin

(See Handbook of British birds, vol. 4, p. 356, 1940, for a description of the plumages.)

A study of correctly identified specimens shows that the range of *curonicus* in the east is much more extensive than given in the literature. All the specimens from the mainland of Asia and from Japan, Formosa, and Hainan previously determined as *dubius dubius* actually belong to *curonicus*, as do six specimens from the Philippines (Luzon) and from Palawan (in the American Museum of Natural History). Stragglers reach even Celebes (United States National Museum) and the New Guinea region (Japen Island). The Mergui specimens reported by Baker (New Fauna, 1929, vol. 6, p. 170) obviously are also *curonicus*.

Size and proportions of adult specimens of *curonicus* are as follows (sexing often unreliable):

WING

EUROPE: Male, 112, 115, 115, 115.5, 117, 118, 118, 120, 120, female, 118, 120.5, 124.

ALGERIA: Male, 112, 113, 114.5, 115, 115, 116, 117, 117.5, 118, female, 120, 121.

KOREA-FORMOSA-HAINAN: Male, 109, 113.5, 114, 114, 114.5, 114.5, 115, 115, 115, 115, 117, 119, female, 115, 116, 116, 116, 118, 119, 119, 120, 120.

JAPAN: Male, 111, 112, female, 112.

RELATIVE LENGTH OF TARSUS (IN PER CENT OF WING LENGTH)

EUROPE: 19.4–21.4 (20.3).
EASTERN ASIA: 19.6–21.3 (20.2).

RELATIVE LENGTH OF BILL (MEASURED FROM BASE, IN PER CENT OF WING LENGTH)

EUROPE: 10.8–12.2 (11.4).
ALGERIA: 10.8–12.5 (11.8).
KOREA: 10.6–11.9 (11.2).

HAINAN: 11.2–13.2 (12.0).
JAPAN: 11.2, 13.0, 13.3.

These figures indicate that eastern Asiatic birds are slightly smaller than western Palearctic birds (average of wing, male, 114.3 against 116.0), but with an average longer bill, particularly on Japan. However, in view of the absence of color differences and with the large overlap in measurements, it would be absurd to recognize additional subspecies. These large-billed eastern birds have led to the many records of "*dubius*" from eastern Asia.

Charadrius dubius dubius Scopoli

Similar to *curonicus*, but base of mandible in adults extensively yellow. Yellow eye-wattle very broad and conspicuous. Black patch on fore-crown appears more extensive and black collar across upper back averages broader. Outermost tail-feather either pure white or with a rather small and faded-out gray brown spot or bar, while in *curonicus* there is a pronounced blackish bar.

Size smaller. Wing, male, 109.5, 110, 110.5, 111.5, 112.5, female, 110, 110, 112, 113. Bill relatively longer, 13.2–14.2 per cent of wing length. Tarsus also relatively longer, male, 23.1–24.0, female, 22.6–24.1 per cent of wing length (average 23.5 per cent). All these measurements and proportions refer to Philippine specimens.

Immature quite different from that of *curonicus*. Breast band blackish, not brownish. White area on forehead much more restricted and well defined. General coloration much less brownish. The only three immatures before me are as follows: female immature, Davao, Mindanao, April 4, 1889; unsexed, Astrolabe Bay, New Guinea, October 31, 1928; unsexed, New Ireland. The fact that immatures are so rare in this subspecies as compared to *curonicus* may indicate either low survival or a shorter duration of the immature stage.

RANGE: The Philippines (Luzon, Mindoro, Negros, Mindanao) and Papuan region.

The realization that two exceedingly similar races of the Little Ring-necked Plover occur in the Philippines raises the question as to the subspecific identity of Sonnerat's specimens. Scopoli's name *dubius* is based exclusively on the specimens collected and described by Sonnerat (1776, Voyage à la Nouvelle Guinée, p. 84, pl.

46). Unfortunately not a single character is mentioned in the description that would permit a differential diagnosis. No yellow is shown on the bill, but the bill is rather long. With the type apparently no longer in existence, I restrict the name *dubius* to the resident population of *Charadrius dubius* on Luzon, thus preserving the currently adopted nomenclature.

The population in the Papuan region was separated by me (1938) as *papuanus*. It is similar to *dubius* in general coloration, but differs slightly in size and proportions. Among 11 adults, nine have the outermost tail-feather pure white, while among 12 adults of *dubius* only four have it pure white. Wing smaller, male, 105–108 (106.4), female, 106, 110, 114.5. Relative length of bill shorter, 12.3–13.3 (12.9 per cent). The subspecific separation of this slightly differentiated population seems inadvisable. This plover has been collected in northern Melanesia only on New Ireland (repeatedly) and on New Britain, by Heinroth (Herbertshöhe, December, 1900, female adult) (1902, Jour. Ornith., vol. 50, p. 400), and by Brown (Sharpe, 1896, p. 273), where it occurs on the gravel banks of the larger streams. It has been observed on New Britain (but apparently not collected) also by O. Finsch and O. Meyer. The species seems to be absent from the Solomon Islands.

Charadrius dubius jerdoni Legge

Apparently indistinguishable from *curonicus* in coloration, but smaller. Wing, male and female, 105–113. Relative bill length, 10.9–12.6 (11.4 per cent).

RANGE: From India to Sumatra and Borneo. This subspecies is so similar to *curonicus* that it appears doubtful whether small wintering *curonicus* can be told from large *jerdoni*.

BILL LENGTH: Although the relative length of the bill is a better diagnostic feature in this species than the absolute length, a few bill measurements will be listed for the sake of completeness. The bill is measured from the beginning of the frontal feathering to the tip.

Charadrius dubius curonicus

BILL

EUROPE: Male, 12.5–14 (13.3); female, 12, 12, 15.

ALGERIA: Male, 13–14.5 (13.8); female, 13, 13.5.
KOREA-FORMOSA-HAINAN-CHINA: Male, 12–14.5 (13.5); female, 12–15 (13.6).
JAPAN: Male, 12.5, 14.5; female, 16.

Charadrius dubius dubius

PHILIPPINES: Male, 14.5–16 (15.2); female, 15–15.5 (15.1).
NEW GUINEA-NEW IRELAND: Male, 14 (14.0); female, 13–15 (14.1).

Esacus magnirostris

The Reef Thick-knee (*E. m. magnirostris* Vieillot) reaches the northeastern limit of its distribution in the Solomon Islands. It is not known what prevented its spread into Polynesia. In northern Melanesia the species is widely distributed. The Whitney expedition obtained it in the Solomon Islands at Momalufu (Shortland group), Ysabel (and adjacent islets), New Georgia (and Wickham Anchorage), Ramos, Kiome (Russell Islands), Guadalcanal, and Awa Raha (Santa Anna). Records in the literature refer to the following islands: Ysabel (Meek) (Rothschild and Hartert, 1902, Novitates Zool., vol. 9, p. 581), New Georgia (Ramsay, 1882, Proc. Linnaean Soc., New South Wales, vol. 7, p. 40), Rendova (Tristram, 1882, Ibis, p. 140; Bull, 1948, p. 174), Florida (Tristram, 1892, Ibis, p. 299), Russell Islands (Bull, 1948, p. 174), and Guadalcanal (Ogilvie-Grant, 1888, Proc. Zool. Soc. London, p. 201). In the Bismarck Archipelago the species has been recorded from nearly every island (including the Admiralty Islands). The favorite habitat seems to be beaches and fringing reefs of the larger islands. There are no records from small atolls.

As I have pointed out previously (Mayr, 1938, p. 15), there are no races in this species. Neither can the genus *Orthorhamphus* be upheld, based on slight differences in the shape of the bill. In fact, I agree with Deignan (1945, Bull. U. S. Natl. Mus., no. 186, p. 129) who considers *magnirostris* as conspecific with *recurvirostris*.

A series of 10 males and 10 females from the Bismarck Archipelago and the Solomon Islands has the following measurements (the sexing may not be reliable):

Wing, male, 261–288 (274.4), female, 270–286 (272.4). Tarsus, male, 86.5–91 (88.4), female, 85.5–90 (88.2). Culmen (from frontal feathering), male, 70–74 (71.6), female, 70–74 (72.1). There is no indication of sexual dimorphism either in size or coloration.

Migrant Visitors[1]

CHARADRIIDAE

Pluvialis squatarola Linnaeus

There is a single record from northern Melanesia (Russell Islands, Bull, 1948, p. 168). The migration of the Gray Plover lies, on the whole, far to the west of northern Melanesia. Occasional stragglers are, however, to be expected in view of the many New Guinea records, some of them as far east as the Fergusson Islands and Louisiades.

Pluvialis dominica fulva Gmelin

The northern Melanesian records of this species have already been listed by Stickney (1943). This is one of the most common visitors to the area (see also Bull, 1948).

Charadrius mongolus

The following three specimens were obtained by the Whitney South Sea Expedition, all by W. F. Coultas; male, Wide Bay, New Britain, April 4, 1933; female, Lihir, Lihir Islands, November 2, 1934; male, Ontong Java, October 4, 1930. East of the Solomon Islands the species has been found as far as Tucopia. The species was previously unrecorded from the Solomon Islands, but there were three records from the Bismarck Archipelago: Admiralty Islands (Challenger), Duke of York Islands (Brown) (Sharpe, 1896, p. 226), and New Ireland (Heinroth, 1902, Jour. Ornith., vol. 50, p. 400). These specimens belong most likely to the far eastern race *stegmanni* (see also Bull, 1948).

Charadrius leschenaultii Lesson

There are three records of this species from northern Melanesia, two made by the Whitney South Sea Expedition: female, Wide Bay, New Britain, April 4, 1933 (W. F. Coultas); unsexed, Choiseul, October 5, 1929 (E. Mayr); the third on Bougainville (Baker, 1948, Smithsonian Misc. Coll., vol. 107, no. 15, p. 9). Bull (1948) has field identifications of this species from the Russell Islands (December 17, February 5, March 24).

[1] Species of shore birds that have been recorded from the New Guinea region but not yet from northern Melanesia are *Charadrius asiaticus veredus*, *Numenius minutus*, *Tringa glareola*, *Tringa nebularia*, and *Calidris tenuirostris*. The normal migratory route of all these species is much farther west.

SCOLOPACIDAE

Numenius phaeopus variegatus Scopoli

The Whimbrel is one of the most common shore-bird visitors to northern Melanesia. The American Museum collection contains the following 33 specimens from this area:

BISMARCK ARCHIPELAGO: Manus, Admiralty Islands, 2 ♀, Sept. 27, 1913 (Meek), Feb. 16, 1934; New Britain, 1 ♂, March 16, 1925 (Eichhorn), 5 ♀, Nov., 1880 (Kleinschmidt), March 6, 1925 (Eichhorn), April 28, 1925 (Eichhorn), Oct. 10, 1932 (2); New Hanover, 1 ♂, March 23, 1923 (Eichhorn), 1 ♀, March 29, 1923 (Eichhorn); New Ireland, 1 ♀, Jan. 11, 1928; Lihir Island, 2 ♂, Nov. 11, Nov. 15, 1934; Feni Island, 1 ♂, May 16, 1924 (Eichhorn).

SOLOMON ISLANDS: Bougainville, 1 ♂, Feb. 20, 1928; Shortland Island, 1 ♂, 1 ♀, Dec. 14, 1927; Choiseul Bay, 1 ♂, Sept. 17, 1929, 1 ♀, Nov. 26, 1927; Ysabel Island, 1 ♂, Sept. 7, 1927, 2 ♀, June 13, 1901 (Meek), Aug. 31, 1927; Guadalcanal, 4 ♂, April 26, 1887 (Woodford), May 14, 1887 (Woodford), April 19, 1927 (2), 1 ♀, April 19, 1927; San Cristobal, 1 ♀, April 1, 1927; Awa Raha, 1 ♂, March 15, 1927, 2 ♀, March 9, 1927; Ontong Java, 2 ♀, Oct. 2, 1930.

In addition there are numerous records in the literature. (See Bull, 1948, for notes on their daily movements.)

Numenius madagascariensis Linnaeus

There is apparently only a single definite record of this species from northern Melanesia: male, Santa Anna (Awa Raha), March 15, 1927, Whitney South Sea Expedition (R. H. Beck).

Limosa limosa melanuroides Gould

The only record from northern Melanesia is one or two specimens collected by O. Finsch on New Britain on November 5, 1880 (see Finsch, 1881, Ibis, p. 540, and Sharpe, 1896, p. 756).

Limosa lapponica baueri Naumann

This subspecies is abundant in New Zealand where its chief wintering area lies. The scarcity of records in Malaysia and the Papuan region is interpreted by Stresemann (1941, p. 95) as indicating that the birds devote only little time to rest during their rapid migration. Bull (1948), however, believes that the chief migration route lies farther east and leads from northern Asia across the Pacific to Fiji and New Zealand. The numerous records from Fiji would seem to support this hypothesis.

Ontong Java, two males, October 2 (Whitney South Sea Expedition); San Cristobal (Tristram, 1879, Ibis, p. 444); New Britain

(Finsch, 1881, Ibis, p. 540). Additional records of specimens taken by the Whitney South Sea Expedition have been published by Stickney (1943, p. 5). Sight records from Tulagi and the Russell Islands are given by Bull (1948).

Xenus cinereus Güldenstaedt

The species has been recorded once on New Britain by O. Meyer (Stresemann, 1930, Ornith. Monatsber., vol. 38, p. 158).

Actitis hypoleucos Linnaeus

The species is ubiquitous in northern Melanesia. It is found not only on the beaches and on lowland streams but also far in the interior and on mountain brooks. The frequency is best illustrated by the fact that there are no fewer than 83 specimens from this area in the collections of the American Museum of Natural History:

Bismarck Archipelago: Manus, Admiralty Islands, 2 ♂, Oct. 11, 14, 1913 (Meek); Witu, 3 ♂, July 8, 23 (2), 1925, 5 ♀, July 17, 18, 23, 24, 27, 1925 (Eichhorn); Rook, 1 ♂, Aug. 2, 1914 (Meek); New Britain, 5 ♂, March 4, April 3, 29, 1925 (Eichhorn), March 25, Sept, 5, 1932, 7 ♀, March 5, 6, 7, (2), April 27, 1925 (Eichhorn), March 25, Oct. 3, 1932, 1 unsexed (Kleinschmidt); New Ireland, 4 ♂, Feb. 20, 26 (2), 29, 1924 (Eichhorn), 3 ♀, Dec. 26, 1923, Feb. 26, 29, 1924 (Eichhorn); New Hanover, 1 ♀, March 11, 1923 (Eichhorn); St. Matthias, 1 ♂, July 27, 1923 (Eichhorn), 3 ♀, July 18, 20 (2), 1923 (Eichhorn); Squally Island, 1 ♂, 2 ♀, Aug. 15, 1923; Lihir, 1 ♂, Oct. 22, 1934, 2 ♂, Oct. 22, Nov. 16, 1934; Feni, 3 ♀, July 4, 9, 15, 1924 (Eichhorn).

Solomon Islands: Nissan, 3 ♂, Aug. 1, 18, 21, 1924 (Eichhorn), 5 ♀, Aug. 4, 11, 12 (2), 20, 1924 (Eichhorn); Bougainville, 2 ♂, Feb. 9, 17, 1928, 3 ♀, Dec. 15, 1927 (Meek), Feb. 9, 17, 1928; Munia, 2 ♀, Aug. 22, Sept. 8, 1893 (Wahnes and Ribbe); Choiseul, 2 ♀, Sept. 16, Oct. 5, 1929; Ysabel, 3 ♂, Aug. 12, 20, 24, 1927, 4 ♀, June 26, 28, July 1, 1901 (Meek), Aug. 20, 1927; Vella Lavella, 1 ♂, March 9, 1908 (Meek), 4 ♀, March 12, 14, 16, 1908 (Meek), Nov. 8, 1927; Narovo, 1 ♀, Oct. 27, 1927; Pavuvu, 1 ♂, Aug. 5, 1927; Guadalcanal, 1 ♂, July 18, 1927; Malaita, 1 ♂, Feb. 5, 1930; San Cristobal, 1 ♂, March 30, 1927; Santa Anna, 2 ♂, March 9, 10, 1927, 2 ♀, March 9, 1927, Jan. 4, 1930.

The Solomon Islands are, on the whole, the eastern limit of the winter range of this species. Only a few stragglers reach the islands to the east, as indicated by the following specimens in the Whitney collection: two females, Lomlom, Reef Islands, October 7; two females, Utupua, Santa Cruz group, September 29; one male, Gaua, Banks Island, November 18.

Heteroscelus incanus

The tatlers are among the more common shore-bird visitants. Northern Melanesia is one of the few areas where both subspecies occur together regularly. However, the American form (*incanus*) is outnumbered by the Asiatic form (*brevipes*) by about 10:1. The specimens collected by the Whitney expedition have been listed previously by Stickney (1943, pp. 5–7).

Heteroscelus incanus incanus Gmelin

There are three specimens from northern Melanesia in the American Museum of Natural History collections. Two specimens are in the Berlin Museum (Vuatom near New Britain, 1905, O. Meyer coll., and New Hanover, see Cabanis and Reichenow, 1876, Jour. Ornith., vol. 24, p. 327) (Stresemann, *in litt.*). One is in the British Museum (Duke of York Island, E. L. Layard, July, see Sharpe, 1896, p. 761).

Heteroscelus incanus brevipes Vieillot

Nearly every collector in northern Melanesia has brought back this form. There are 30 specimens from northern Melanesia in the American Museum of Natural History. The Solomon Islands are the eastern limit of the wintering area of this species. (For field notes of this species, see Bull, 1948.)

Arenaria interpres interpres Linnaeus

The Turnstone is a fairly frequent visitor to northern Melanesia. The American Museum has the following specimens from this area:

Bismarck Archipelago: Storm, 1 ♀, Sept. 6 (Eichhorn).
Solomon Islands: Poharan (Bougainville), 1 ♂, April 17; Ontong Java, 3 ♂, 1 ♀, Oct. 6; Gizo, 1 ♀, Nov. 3; Ramos, 1 ♂, Sept. 4; San Cristobal, 1 ♀, April 2; Awa Raha, 2 ♂, 1 ♀, March 15.

There are a number of earlier records listed in the literature. The migration of the species was discussed by Stickney (1943, pp. 7–8).

Gallinago megala Swinhoe

This is the only snipe that has been recorded from northern Melanesia. All the records are from the Bismarck Archipelago:

Manus, Admiralty Island, 1 ♀, Oct. 10, 1913 (Meek); Bungula Bay, New Britain, 2 ♂, 2 ♀, Nov. 2–4, 1932 (Coultas); Lihir Island, 2 ♀, Nov. 6–22, 1934 (Coultas).

Dahl obtained two specimens (December 31, March 2) on New Britain (1899, Mitt. Zool. Mus. Berlin, vol. 1, p. 145).

Ereunetes acuminatus Horsfield

The Sharp-tailed Sandpiper is a fairly common visitor to the area. The following 16 specimens are in the collections of the American Museum of Natural History:

Bismarck Archipelago: Manus, Admiralty Island, 2 ♂, Oct. 10, 12, 1913, 9 ♀, Sept. 9 (4), Oct. 10, 11 (2), 12, 14, 1913 (Meek); Wide Bay, New Britain, 1 ♀, Jan. 3, 1933; Lihir, 1 ♂, Nov. 3, 1934, 1 ♀, Nov. 8, 1934.

Solomon Islands: Vella Lavella, 1 ♂, Nov. 14, 1927; Ontong Java, 1 ♀, Oct. 4, 1930.

Previous Records Include: Bougainville, 1 ♂, 1 ♀, Oct. 23, Nov. 1 (Baker, 1948, Smithsonian Misc. Coll., vol. 107, no. 15, p. 10); New Britain, Oct., Dec., 1880 (O. Finsch, Mitt. Ornith. Ver. Wien, 1884, p. 94); New Britain, Oct. 29, 1896 (Dahl, 1899, Mitt. Zool. Mus. Berlin, vol. 1, p. 145); New Ireland (Brown, see Sharpe, 1896, p. 569). Bull (1948) has sight records from the Russell Islands.

The Santa Cruz Islands and New Caledonia constitute the eastern limit of the migratory range of this species.

Ereunetes ruficollis ruficollis Pallas

The following nine specimens are in the American Museum of Natural History collections:

Manus, Admiralty Island, 4 ♂, 3 ♀, Oct. 14, 1913 (Meek); Rabaul, New Britain, 1 ♂, April 10, 1928 (Beck); Santa Anna, Solomon Islands, 1 ♀, March 15, 1927. In the Berlin Museum is a bird collected by O. Finsch, Dec. 12, 1880, on New Britain (1881, Ibis, p. 540). Ramsay has reported it from the Duke of York Islands.

This form is conspecific with *minutus* (Leisler, 1812), but *ruficollis* (Pallas, 1776) is the nominate form since it has many years' priority.

Ereunetes minutillus subminutus Middendorff

Only once recorded in northern Melanesia: Matupi (near Rabaul), New Britain, May 21, O. Heinroth coll. (Stresemann, *in litt.*) [erroneously recorded as *Tringa ruficollis* in Jour. Ornith., vol. 50, 1902, p. 402].

Ereunetes albus Pallas

The Sanderling has not yet been recorded from northern Melanesia (see Stickney, 1943, pp. 8–9).

RECURVIROSTRIDAE

Himantopus himantopus leucocephalus Gould

There is apparently only a single record of this species from northern Melanesia. Seven specimens were collected by Schumm from a flock that appeared at Bitokara, Talasea District, New Britain (1929, Ornith. Monatsber., vol. 37, p. 47). It is very probable that these were winter visitors from Australia. The taxonomy of this subspecies has been discussed by me previously (Mayr, 1938, pp. 14–15).

PHALAROPODIDAE

Phalaropus lobatus Linnaeus

One of the chief winter quarters of this species lies along the north coast of New Guinea, as far east as New Britain. Two specimens from this area are in the Berlin Museum (Stresemann, *in litt.*): Aris Island, north of Manam, November 27, 1900 (O. Heinroth), Reber (Vuatom), March, 1905, O. Meyer. The species was not encountered by the Whitney South Sea Expedition.

SHORE-BIRD MIGRATION IN NORTHERN MELANESIA

Of the shore birds that visit northern Melanesia only one species, *Himantopus l. leucocephalus*, comes from the south; all the others are from the Northern Hemisphere. These northern shore birds can be divided into three groups (partly after Stresemann, 1941):

1. Species that migrate directly from south Asia to Australia, via Sunda Islands or Philippines-Celebes, and reach northern Melanesia only rarely or accidentally:

Charadrius leschenaultii
Numenius madagascariensis
Limosa limosa melanuroides[1]
Xenus cinereus[1]
Ereunetes minutillus subminutus[1]

2. Species that migrate southward through the Pacific in a

[1] These species winter mostly in the tropical belt and reach Australia in small numbers or not at all.

broad front and presumably reach northern Melanesia mainly from Micronesia:

Pluvialis dominica fulva
Charadrius mongolus
Numenius phaeopus variegatus
Limosa lapponica baueri
Heteroscelus incanus brevipes
Actitis hypoleucos
Arenaria interpres
Gallinago megala
Ereunetes acuminatus
Ereunetes ruficollis ruficollis
Phalaropus lobatus[1]

3. Species that reach northern Melanesia across the Pacific:

Heteroscelus incanus incanus

Other shore birds that seem to cross the Pacific, but have not yet been recorded from northern Melanesia are:

Numenius tahitiensis
Ereunetes melanotus
Limosa limosa haemastica

There are only six common shore birds in northern Melanesia. Their relative frequency is indicated by the numbers of specimens, in parentheses, from northern Melanesia in the American Museum of Natural History:

Actitis hypoleucos (83)
Pluvialis dominica fulva (48)
Numenius phaeopus variegatus (33)
Heteroscelus incanus brevipes (30)
Ereunetes acuminatus (16)
Arenaria interpres (12)

The majority of the individuals of these six species seems to winter in this area rather than to move on to Australia.

PRINCIPAL LITERATURE ON THE SHORE BIRDS OF NORTHERN MELANESIA

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[1] This species winters mostly in the tropical belt and reaches Australia in small numbers or not at all.

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